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Approved For Release 2005/01/31 : CIA-RDP79M00467A002500080011-5

8 September 1976

25X1

MEMORANDUM FOR: Director of Central Intelligence

FROM : Ernest J. Zellmer  
Associate Deputy Director for Science  
and Technology

SUBJECT : CIA Position on BACKFIRE

25X1A 1. Attached are the conclusions of OWI/DDS&T on BACKFIRE. Also forwarded herewith are the conclusions of [ ] As you will note, the OWI analysis provides two ranges of value because we are uncertain as to the wing design. We believe these values encompass the BACKFIRE capabilities as demonstrated in the test program and are representative of the production aircraft.

25X1A 2. [ ] provides two additional estimates. One of these is designated flight data extrapolated to potential. To reach this estimate, [ ] increases the fuel load at the risk of aircraft losses on take-off.

25X1A [ ] It could be expected to result in reduced Air Force pressure [ ] and, not incidentally, this may have been the reason for its inclusion. We do not disagree that these are possible changes, but they do not reflect the data we have.

3. The third [ ] estimate is one we requested. It reflects possible improvements which could, in the future, be made to BACKFIRE to improve performance.

4. Yesterday, copies of the draft CIA and [ ] studies were provided to the intelligence components concerned with BACKFIRE analysis. A copy was also given to Andy Marshall for use with his review group. It will be about a month before formally published copies of these reports will be available. This time is needed for editing, graphics development and publication. Our analysis is essentially complete and the estimated performance of BACKFIRE is documented in the draft report.

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5. Community review in WSSIC and in conjunction with NIE 11-3-8/76 can now begin. Meanwhile, it will be necessary for the CIA to express its views on BACKFIRE in several arenas. There are no complications to doing so in the community review process leading to NIE 11-3-8/76. However, in other areas it may be inappropriate to continue to speak of preliminary and unfinished analyses when that status has changed, albeit without yet having published a formal report. Considering the sensitivity of the issue, your guidance on this matter is solicited. If you agree that CIA should now use the results of its completed analysis, the mechanics for an early formalization of the conclusions of the analysis can be arranged. 25X1A

  
Ernest J. Zellmer

Attachments:  
As Stated

SUBJECT: CIA Position on BACKFIRE

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O/DDS&T:EJZellmer:s  8Sept.76

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25X1D During 1972-1973 [redacted] avail-  
 able [redacted] data were used to  
 establish an aerodynamic, propulsion, and weights data base for  
 25X1A the BACKFIRE bomber. [redacted] the design's potential  
 performance characteristics, compatible with a twin-engine bomber  
 of the size determined from photography and with a propulsion sys-  
 tem derived from the CHARGER NK-144 engine data base, were ana-  
 lytically estimated (Reference 1).

25X1C During 1975-1976 [redacted] a follow-up analy-25X1A  
 sis was initiated to establish performance characteristics from  
 25X1D [redacted] data covering a five year period. This  
 report [redacted] presents the results of this [redacted] 25X1B  
 analysis. [redacted]

25X1D [redacted] showed that BACKFIRE was not  
 operated at conditions compatible with the design's potential  
 performance.

25X1D

The principal factors [redacted]

1. Less than predicted takeoff lift capability because the flap system is less sophisticated than assumed in Reference 1.
2. Less afterburner takeoff thrust than expected from the NK-144 engine, probably due to a restricted afterburner fuel flow at low Mach numbers and altitudes.
3. Decreased estimate of internal fuel capacity, associated with decreased fuselage depth estimated from recent photography.

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Installation of an improved flap system similar to that assumed in the analytical studies, with a corresponding afterburner thrust increase to compensate for the higher drag resulting from a high lift flap system, would easily permit BACKFIRE to achieve its predicted design TOGW and to fly at more fuel-efficient altitudes. Maximum-fuel (147,000 lb) range would closely approximate the previously predicted basic-fuel (148,000 lb) range.

The single-engine, sea level, standard-day rate of climb of the operationally observed BACKFIRE is less than 100 ft/min when the takeoff weight exceeds approximately 230,000 lb. Operation at greater weights might unduly risk aircraft and crew. That fact may mean that either:

1. The design takeoff weight is in the vicinity of 230,000 lb, 25X1D  
or

Subsequent to the completion of Reference 1, a technology evaluation analysis (Reference 8) indicated that if the United States aircraft industry had designed a twin engine bomber of the size of BACKFIRE, with engine thrust matched to flap lift capability, a takeoff gross weight of 305,000 lb and range of 6150 nautical miles would appear possible. 25X1D

4. Refueling extends BACKFIRE range capability substantially. If refueled at optimum distances, about 1600 nm from home base, ranges in excess of 6000 nm for the as-observed aircraft are possible; i.e., BACKFIRE can easily reach Cuba when operating from Northern LRA bases.

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*This memo was prepared this afternoon to provide background for his meeting this evening with Secretary Clements*

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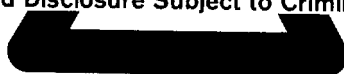
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